



NTSB National Transportation Safety Board

General Aviation and the NTSB Most Wanted List



**NW Aviation Conference and Trade
Show – Puyallup, WA
February 25, 2017**

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Member, NTSB**

N6529R - B36TC Bonanza



NTSB Mission



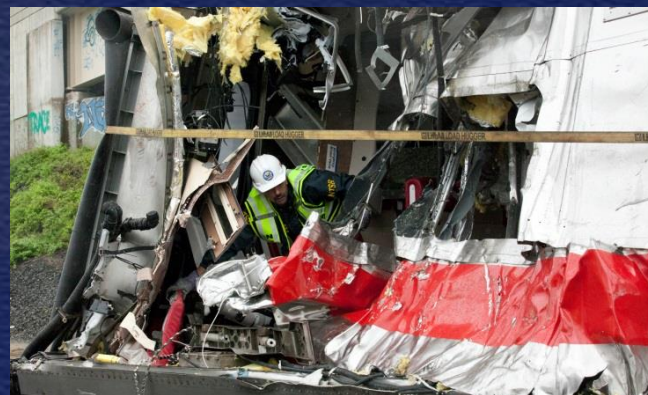
The National Transportation Safety Board (NTSB) is an independent Federal agency created by the U.S. Congress to investigate **every civil aviation accident** in the United States and **significant accidents in the other modes** of transportation, namely – marine, highway, railroad and pipeline.

What We Do

Investigate the accident.



Determine the probable cause of the accident.



Propose corrective action to reduce the likelihood of a recurrence of the accident - through formal “recommendations”.

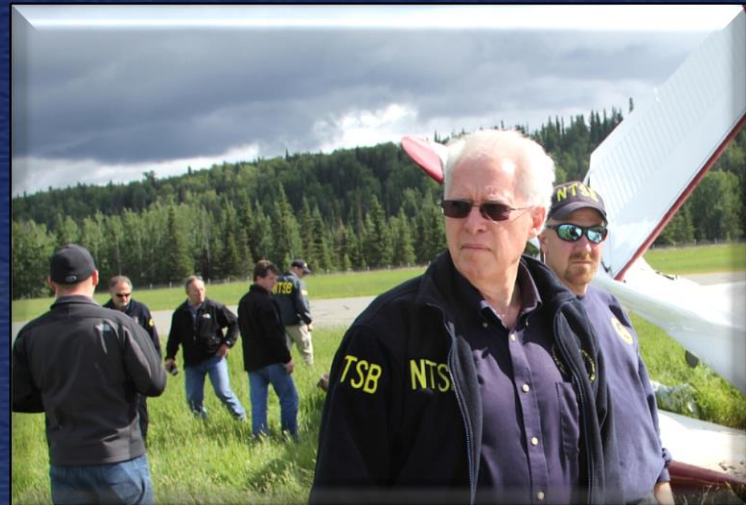


The Investigative Process – Major Investigations

- Decision to launch a “Go-Team”
- Arrival On-Scene
- Organizational Meeting
- Briefings and on-scene activities (i.e. fact gathering)
- Post on-scene fact gathering
- Analysis
- Report preparation – recommendation development
- Board Approval
- Advocacy

NTSB's Multi-Modal Mandate

- Maintain congressionally mandated independence
- Conduct objective accident investigations and safety studies
- Perform fair & objective airman/mariner certification appeals
- Advocate safety – NTSB Most Wanted List, recommendations



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NTSB 2017 Most Wanted List



- Eliminate Distractions
- End Alcohol and Other Drug Impairment in Transportation
- Ensure the Safe Shipment of Hazardous Materials
- Expand Recorder Use to Enhance Safety
- Improve Rail Transit Safety Oversight
- Increase Implementation of Collision Avoidance Technologies
- Prevent Loss of Control in Flight in General Aviation
- Reduce Fatigue-Related Accidents
- Require Medical Fitness
- Strengthen Occupant Protection

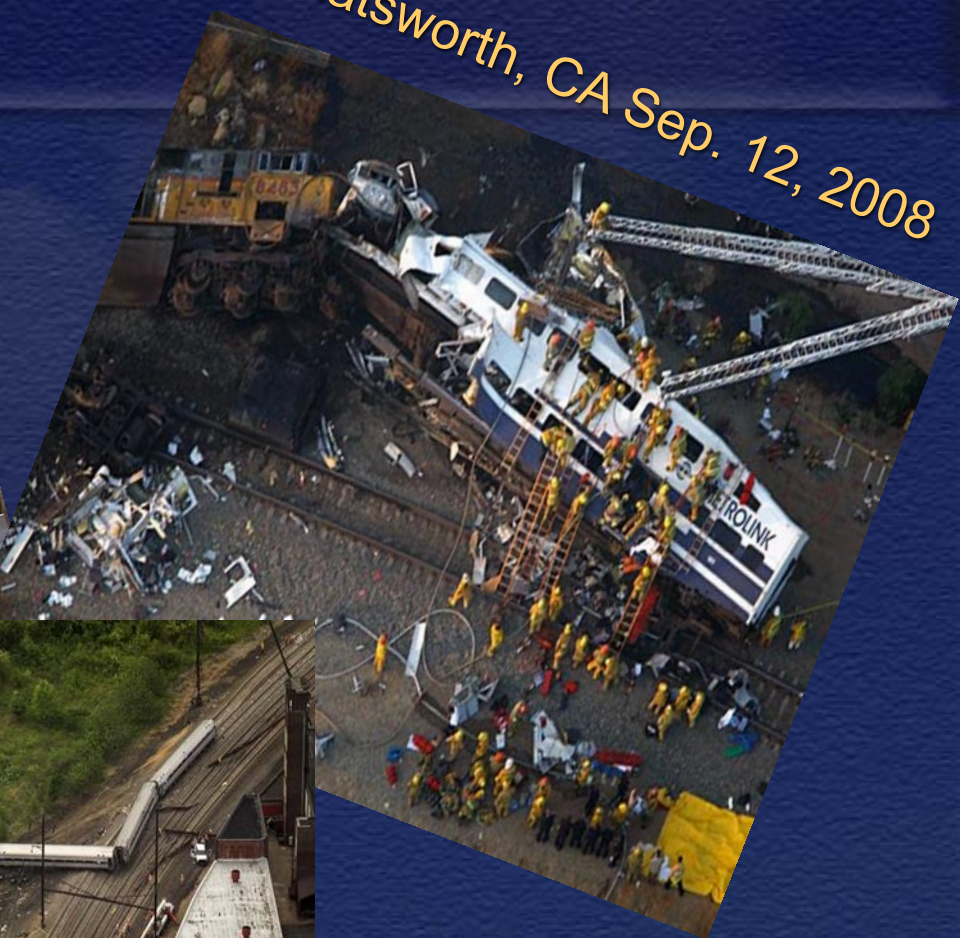
Eliminate Distractions



Gray Summit, MO - August 2010



Chatsworth, CA Sep. 12, 2008



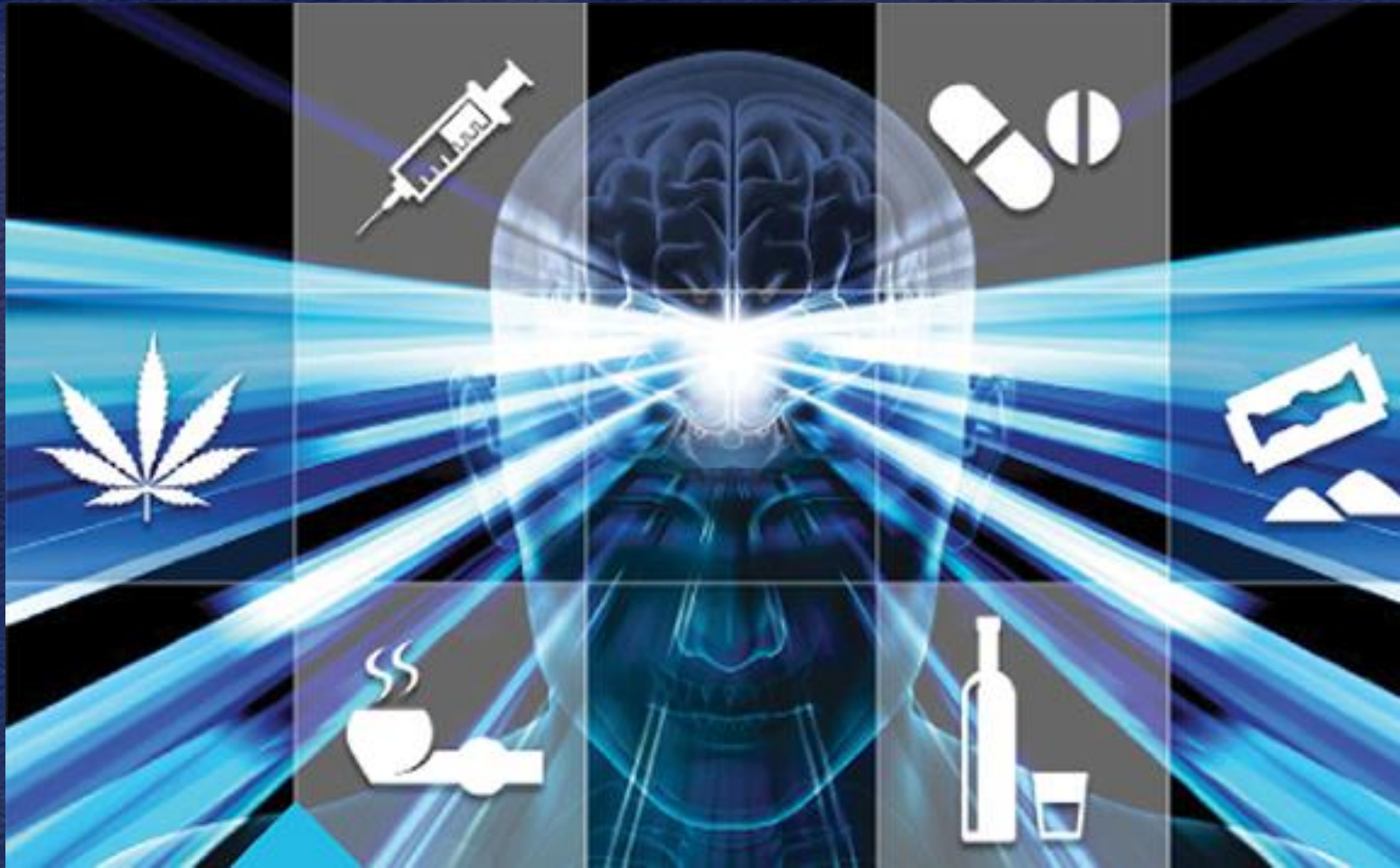
Amtrak 188, May 12, 2015
Philadelphia, PA

2017 MWL – Eliminate Distractions

A factor in all modes of transportation:

- Motor vehicle emphasis
 - Electronic devices within the vehicle
- Aviation emphasis
 - Sterile Cockpit
 - Appropriate use of PEDs
 - Manage distractions

End Alcohol and Other Drug Impairment

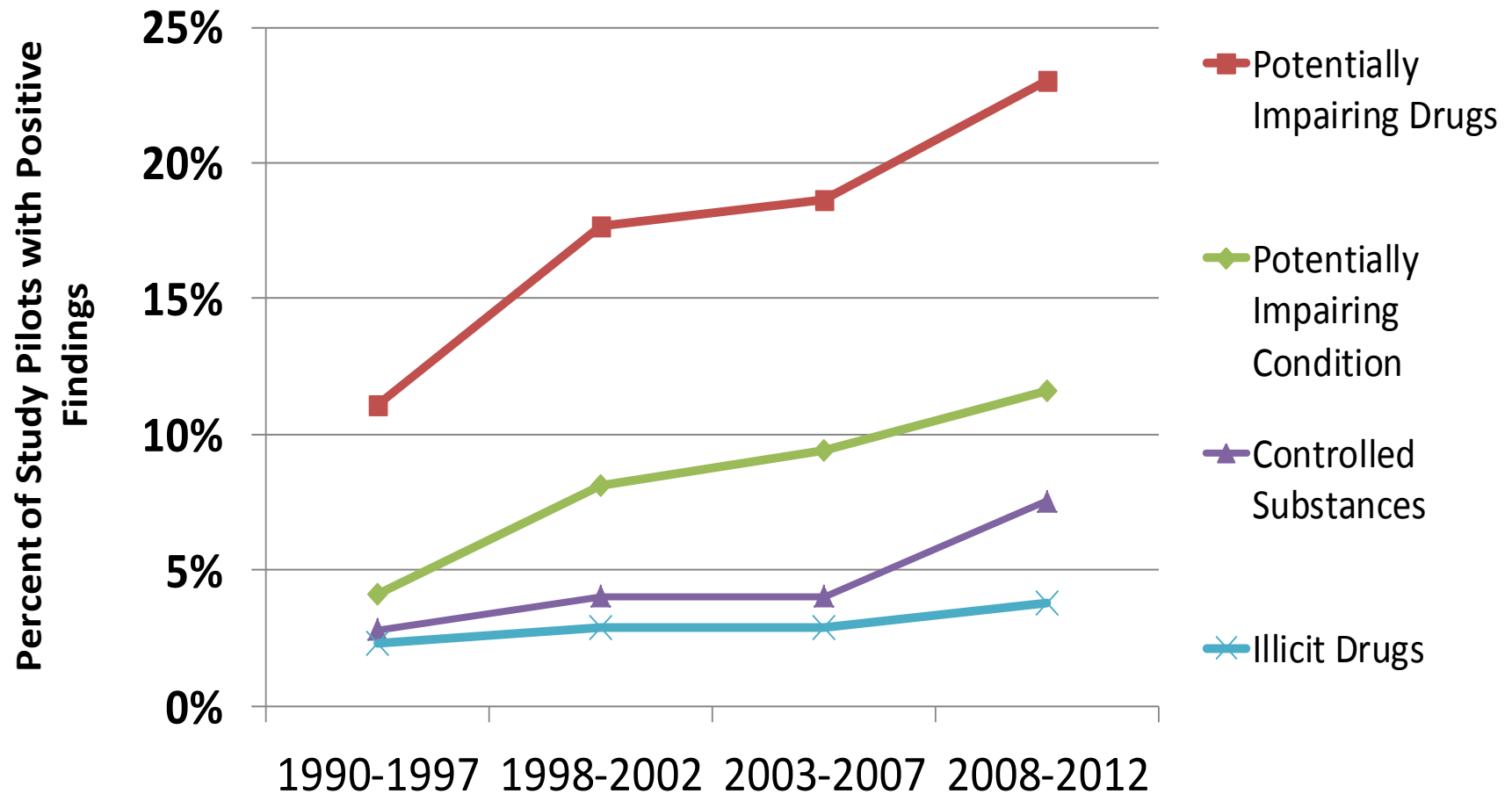


2017 MWL - End Alcohol and Other Drug Impairment

A factor in all modes:

- Fatally injured pilots - potentially impairing drugs
 - 11% average 1990 - 1997
 - 23% average 2008 - 2012

Toxicology Findings by Category, 1990-2012





14 St. Lucie, FL

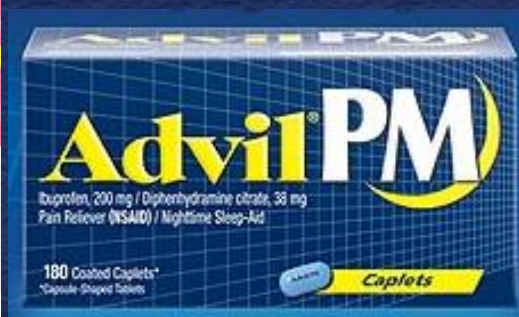
Diphenhydramine
+
Doxylamine

April 14, 2013



Most Common Drugs

- Sedating antihistamines
 - Most common category
- Diphenhydramine
 - Most common individual drug
 - Most common potentially impairing drug
 - Use INCREASING



2017 MWL – Require Medical Fitness





Red Oak, IA/April 17, 2011



Chesterfield, NJ/ February 16, 2012

2017 MWL – Require Medical Fitness

A factor in all modes:

- Airman Medical – fitness at exam point
 - Pilots must self-assess fitness
- Undiagnosed or unreported medical conditions pose threats
 - Obstructive Sleep Apnea
 - Diabetes
 - High Blood Pressure

Reduce Fatigue - Related Accidents





Birmingham, AL/ August 14, 2013



Cranbury, NJ/ June 7, 2014



Doswell, VA/ May 31, 2011

Port Arthur, TX/ January 23, 2010



Bronx, NY/ December 1, 2013



Bronx Bus Crash, March 12, 2011



15 KILLED
17 INJURED

2017 MWL - Reduce Fatigue - Related Accidents

A factor in all modes:

- 182 Major investigations (2001 – 2012)
 - 20% involved fatigue
- Need
 - Research, education, training
 - Technology development
 - Hours of service, on/off duty policies
 - Fatigue risk management systems
 - Medical treatment of sleep disorders

Strengthen Occupant Protection

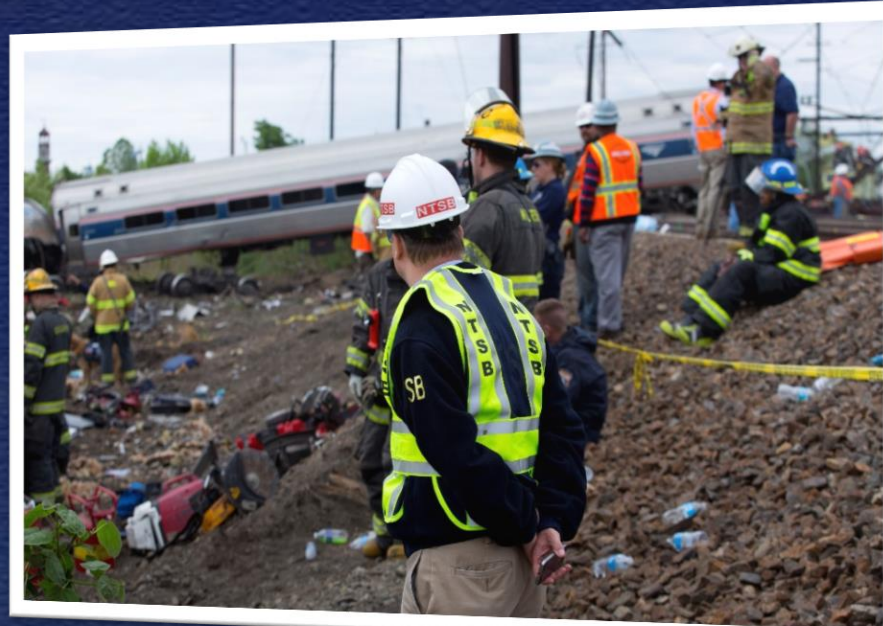




San Francisco, CA / July 6, 2013



24 Anaheim, CA / April 24, 2014



Philadelphia, PA / May 12, 2015

2017 MWL – Strengthen Occupant Protection

A factor in all modes:

- Numerous investigations showed potential for reduced injuries & fatalities
- Need
 - Enhance survival space & ease of evacuation
 - Increased use of existing restraint systems
 - Shoulder harnesses for GA aircraft

2017 MWL - Expand Recorder Use to Enhance Safety



SpaceShipTwo
Oct. 31, 2014



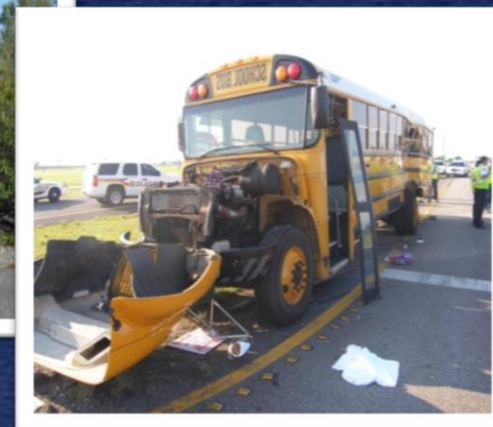
Embraer EMB-500, N100EQ
Gaithersburg, Maryland /
Dec. 8, 2014



FedEx Freight truck-
tractor double
trailers and
Silverado
motorcoach /
Orland, CA / Apr. 10,
2014



Commercial
Vehicle
Onboard
Video
Systems -
2015



2017 MWL - Expand use of Recorders

A factor in all modes:

- Critical in accident investigation
 - Install crash resistant image recorders in smaller turbine powered aircraft
 - Install flight recorders in transport category and HEMS aircraft
 - Install inward & outward video cameras in trucks, busses, & trains
 - Use PED memory when available

Prevent Loss of Control in Flight



Loss of Control



Loss of Control



Execuflight Flight 1526
British Aerospace HS /
Akron, Ohio / Nov. 10, 2015



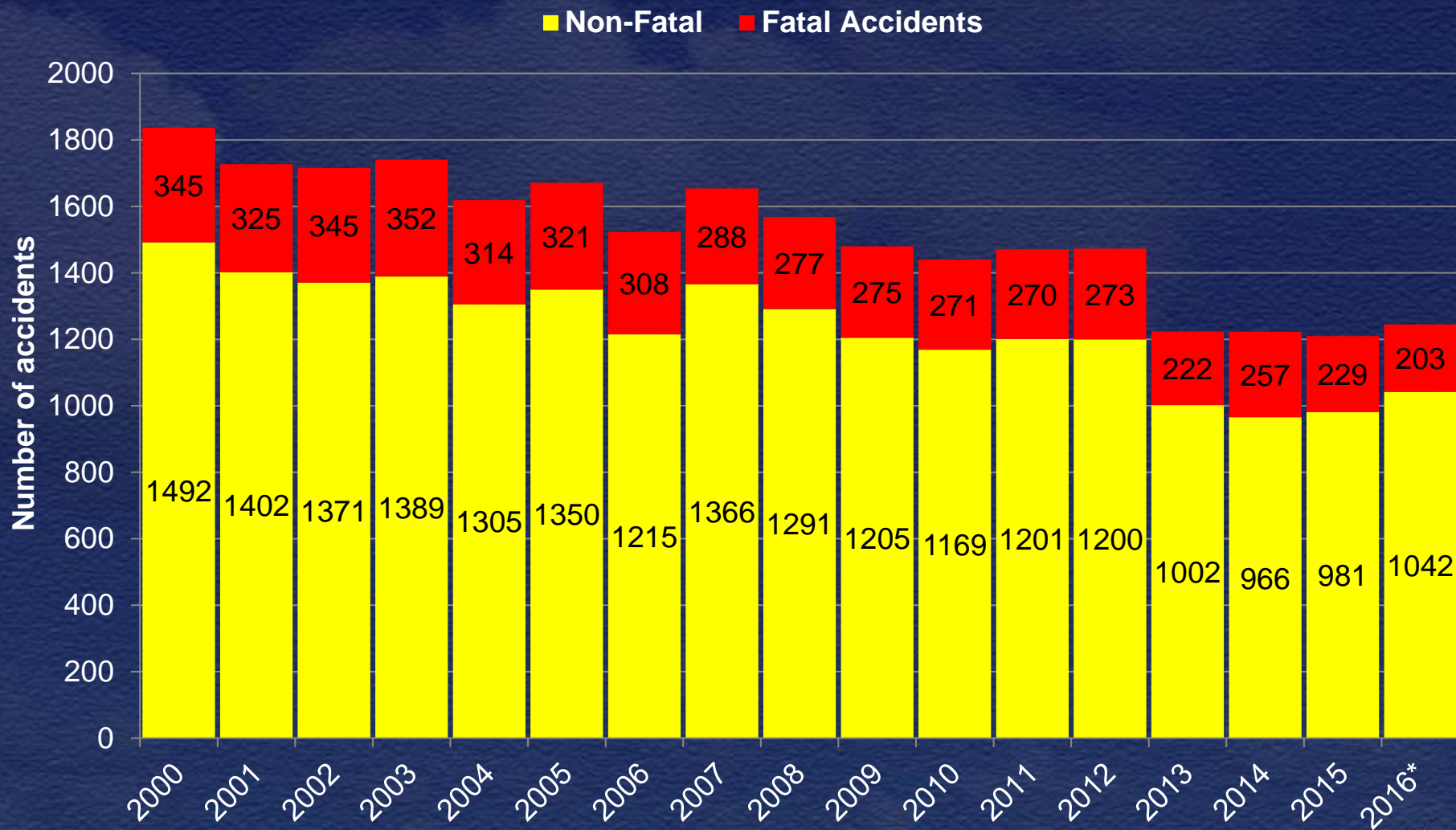
Beech A36 / Huggins, MO
/ June 12, 2015



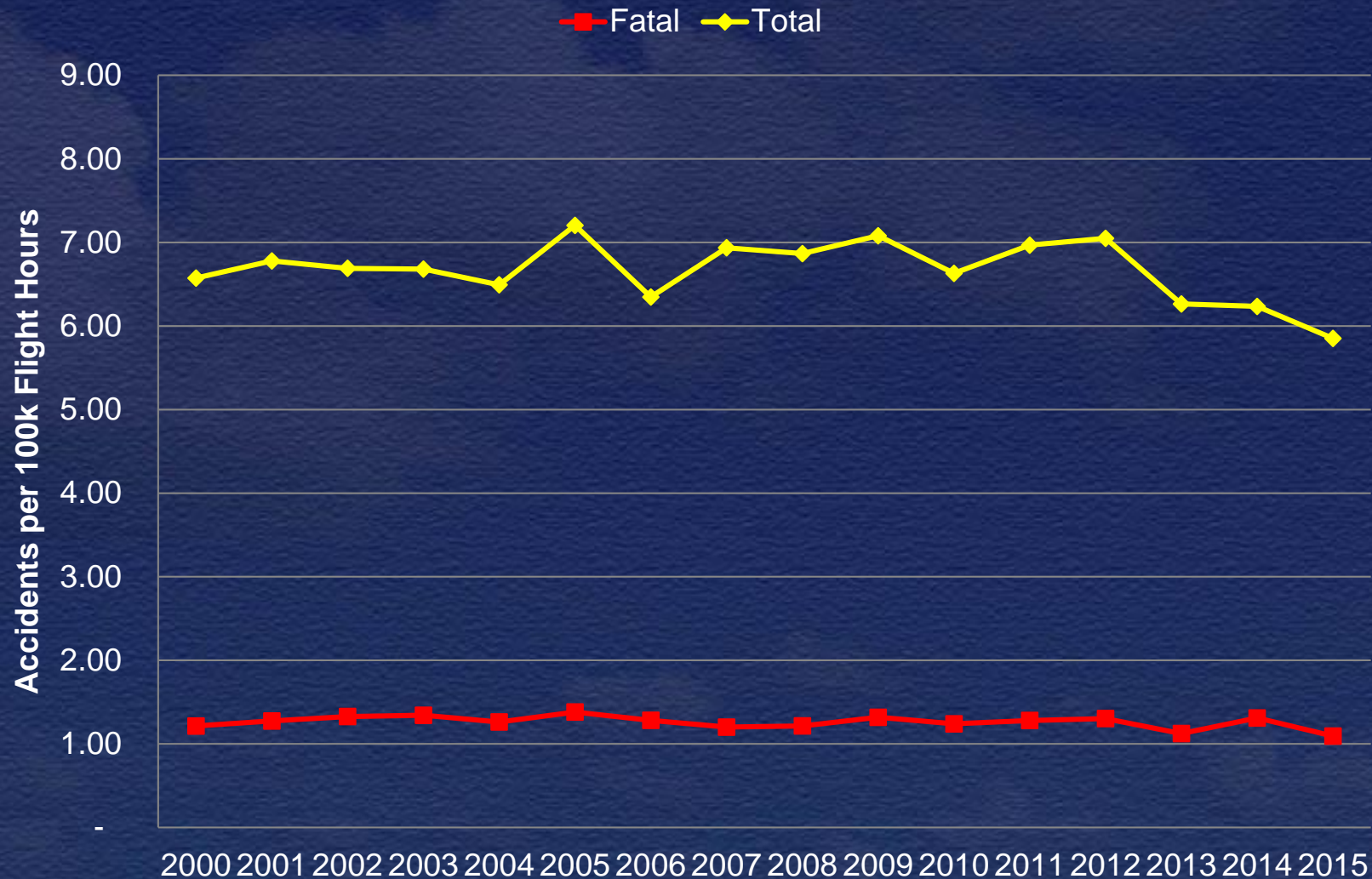
2017 MWL – Prevent Loss of Control in Flight in General Aviation

- More than 40% fatal GA accidents were LOC during 2004 – 2014
- Most deadly flight phases
 - Approach to landing
 - Maneuvering
 - Climb

All GA Accidents



GA Accident Rates

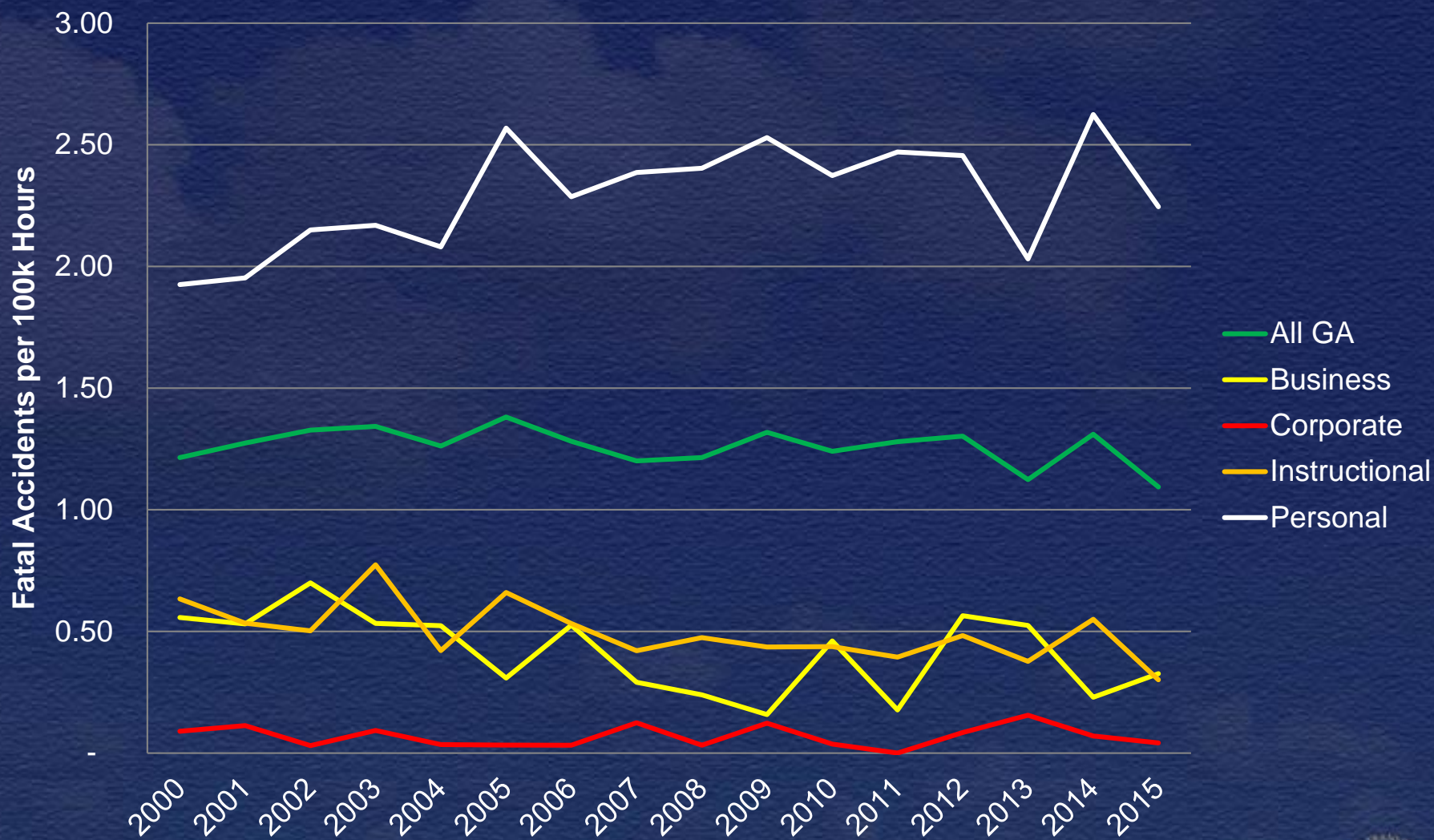


*The 2011 GA Survey is currently not available. FAA is actively engaged in re-calibration efforts and expect to have validated 2011 data published at a later date.

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Fatal Accident Rates per 100k Flight Hours



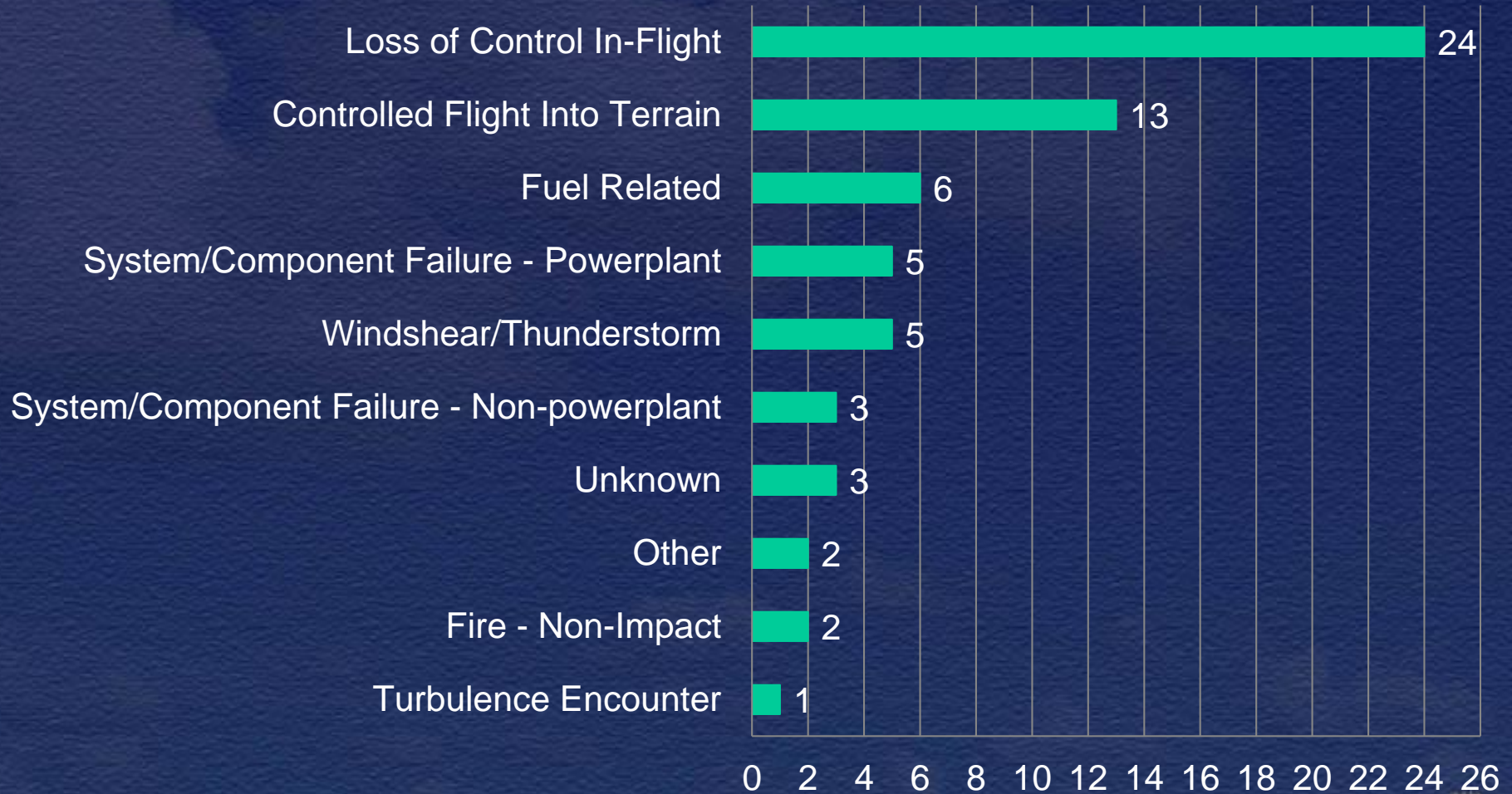
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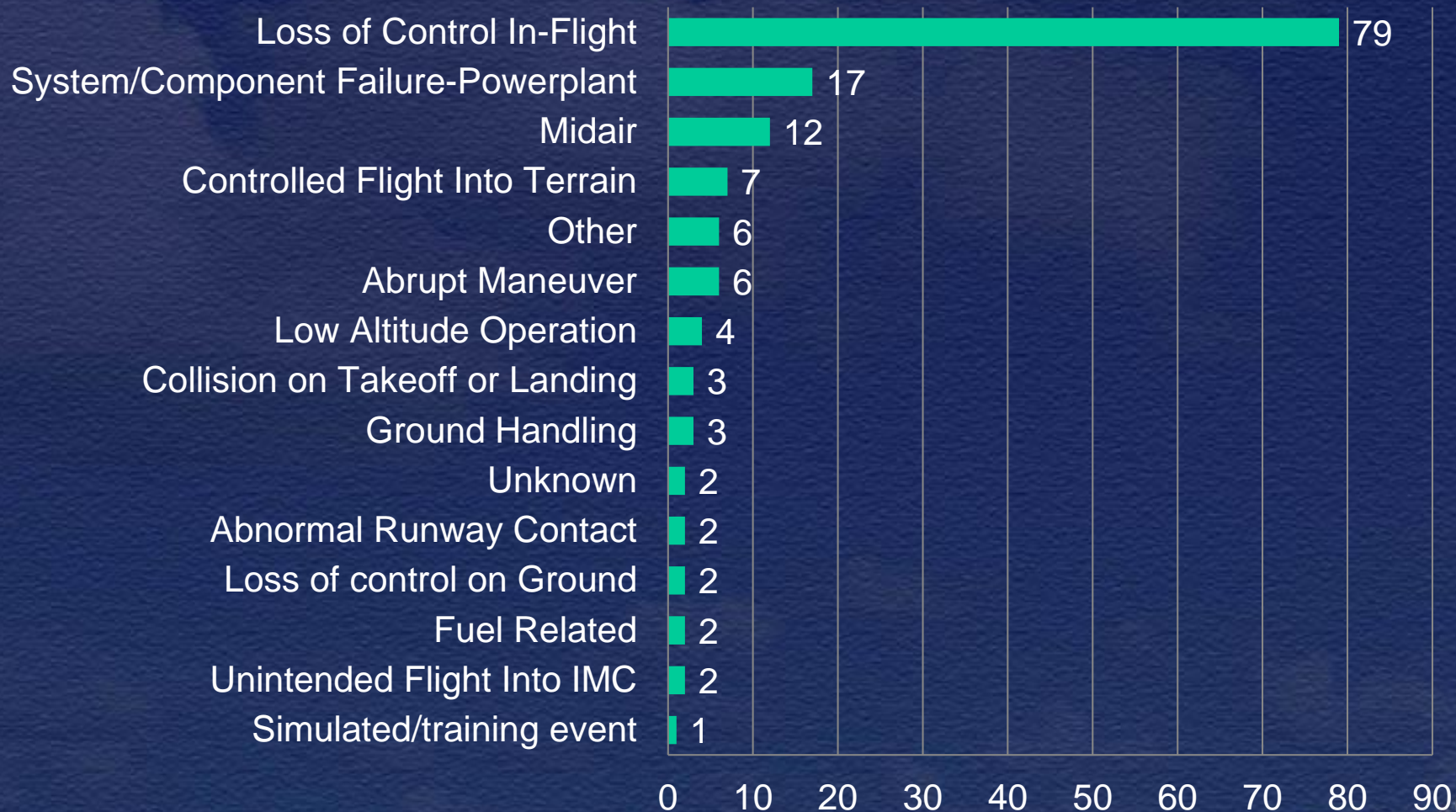
Business Flying, 2008-2016

Number of Fatal Accidents



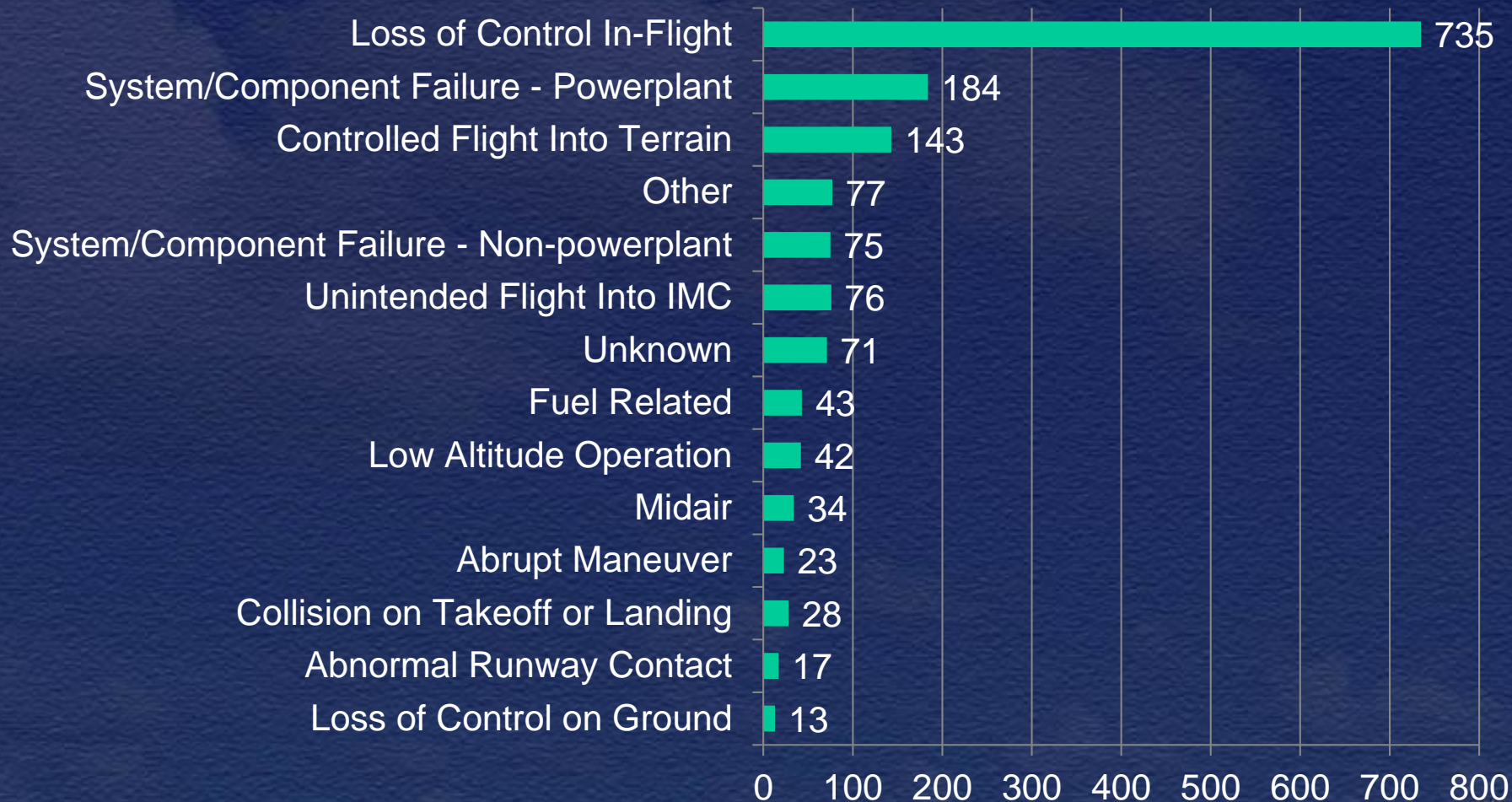
Instructional Flying, 2008-2016

Number of Fatal Accidents

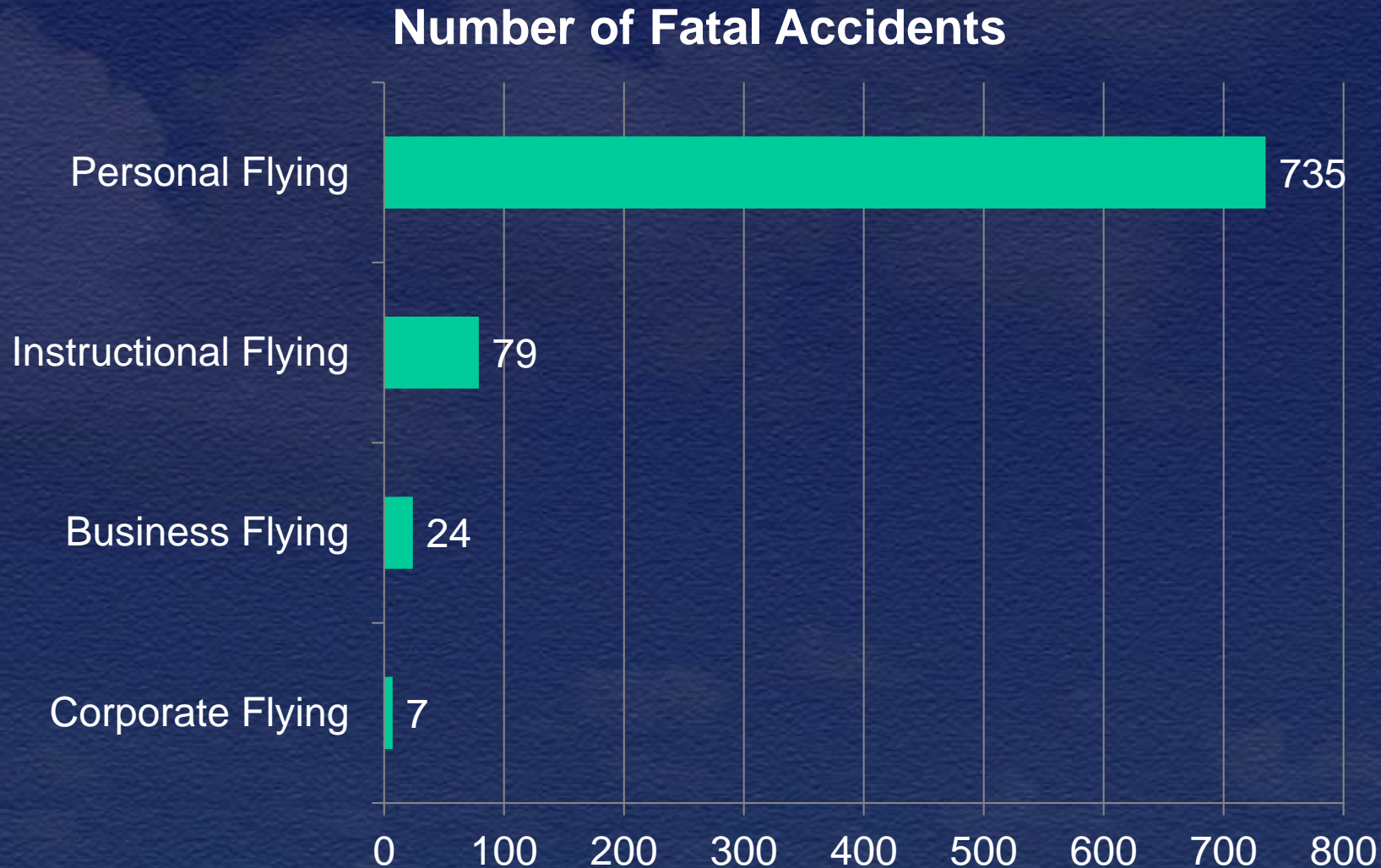


Personal Flying, 2008-2016

Number of Fatal Accidents



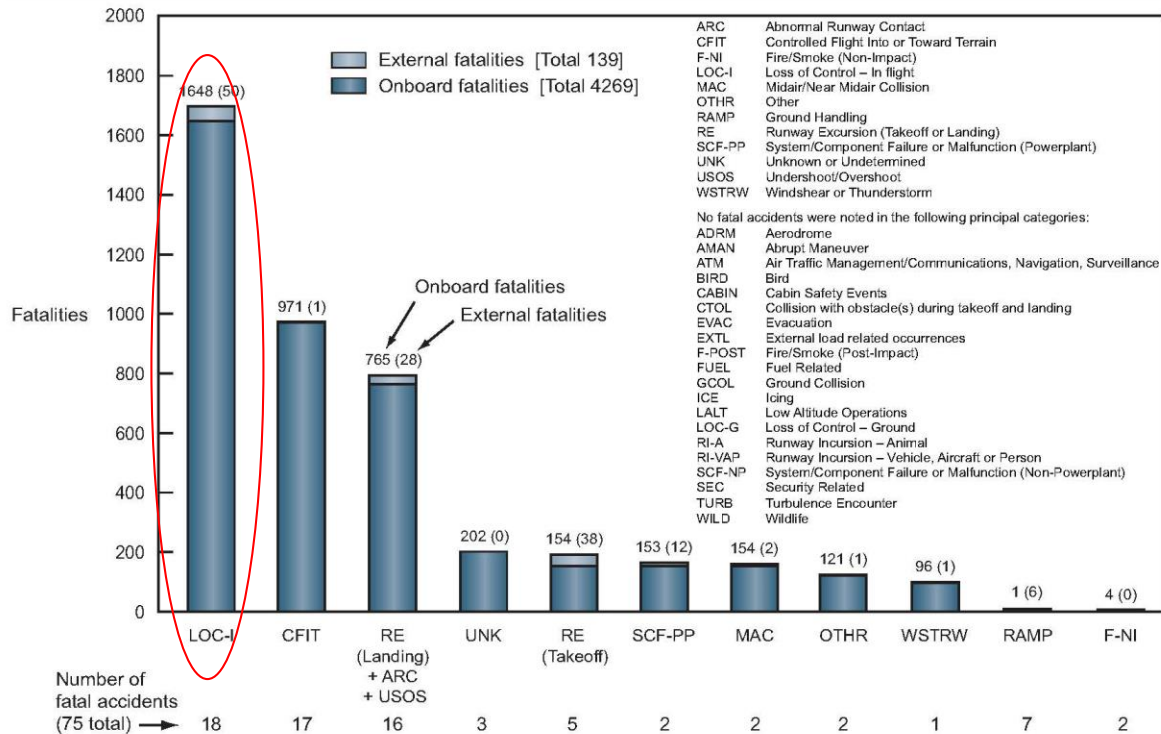
Loss of Control In-Flight, 2008-2016



Boeing Annual Statistical Summery

Fatalities by CAST/ICAO Common Taxonomy Team (CICTT) Aviation Occurrence Categories

Fatal Accidents – Worldwide Commercial Jet Fleet – 2003 Through 2012



Note: Principal categories as assigned by CAST.

For a complete description of CICTT Aviation Occurrence Categories, go to: <http://www.intlaviationstandards.org/>



GAJSC — Who We Are...

Steering Committee

Co-chairs – Mike O'Donnell (FAA/AVP)
Sean Elliott (EAA)

Government – FAA (AFS, AIR, ATO, AAM & ARP)
– NASA (Research),
– NTSB (Observer)

Industry – GAMA, EAA, NBAA, NATA,
SAFE, LAMA & Insurance

- Strategic guidance
- Management/Approval of Safety Plan
- Provide direction
- Membership Outreach
- Provides linkage to ASIAS

Safety Analysis Team

Co-chairs: Corey Stephens (FAA)
Jens Hennig (GAMA)

Members: FAA, AOPA, EAA, GAMA, UAA, MFGs,
FAAST, NAFI, Insurance, Academia, SAFE

- Identify future areas of study/risk
- Charter safety studies
- Provide guidance and direction
- Draw data from various areas
- Develop a prioritized Safety Plan
- Develop metrics to measure effectiveness of safety solutions

Working Groups

(To include SMEs from various general aviation segments, depending on study)

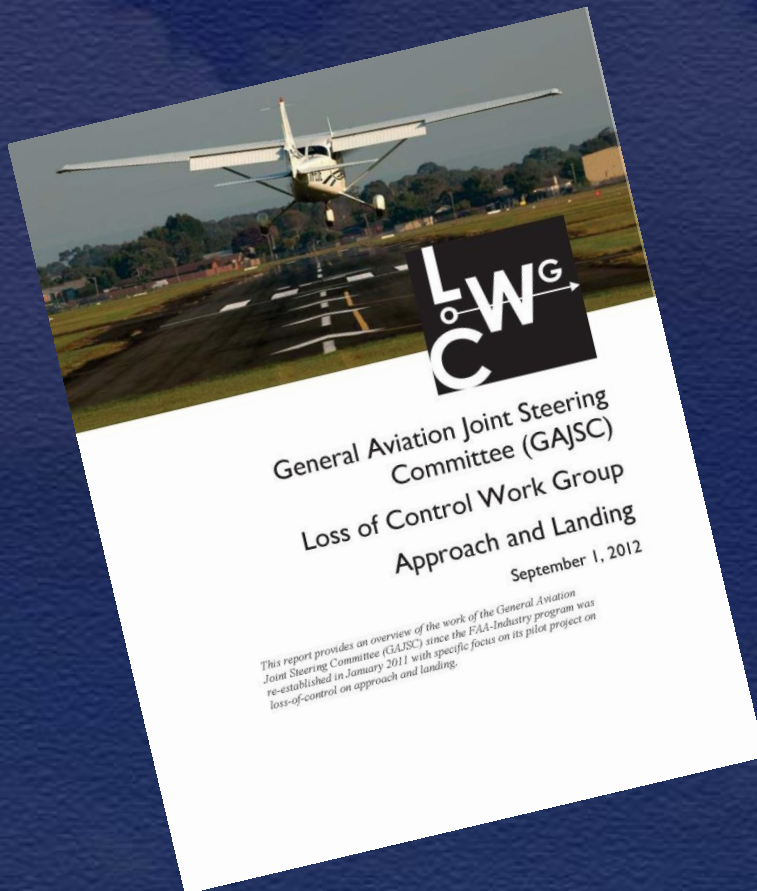
- Data analyses
- Safety enhancement
- Mitigation development

Loss-Of-Control Working Group

Safety Enhancements Identified

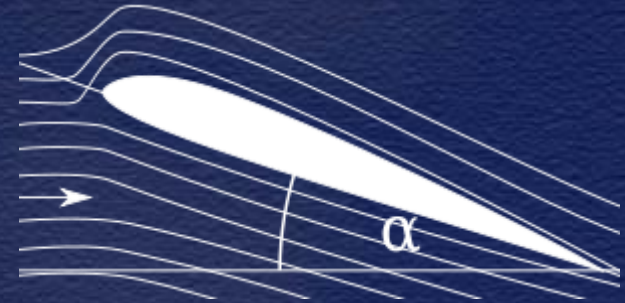
- AOA – New, Current, Retrofit
- Aeronautical Decision Making
- Stabilized Approach
- Single Pilot CRM
- Medication effects
- Weather Technologies
- Etc...

28 Safety Enhancements
plus
8 more with second study



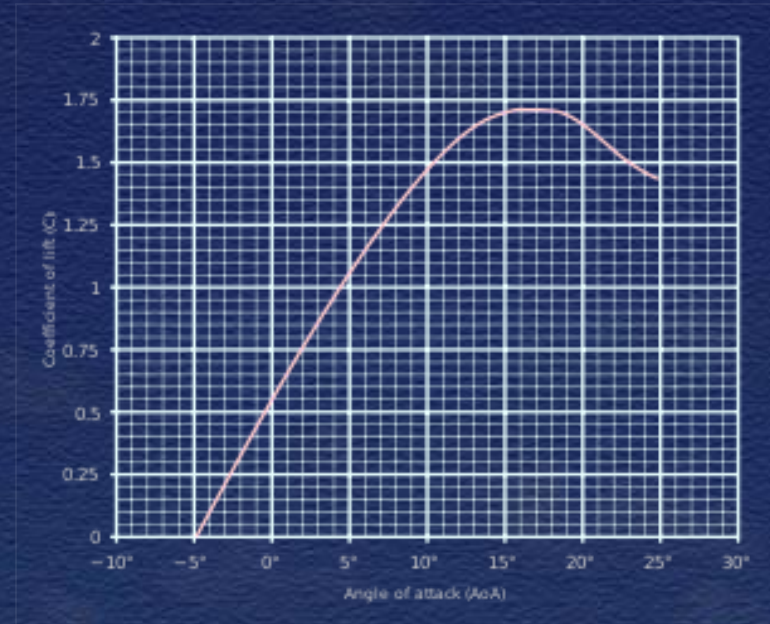
Lower Cost AOA Displays

- Stall occurs at a specific Angle-of-Attack
 - But not necessarily at the same airspeed



First of AOA indicators built to ASTM stds and installed as a minor mod

FAA policy changed on Non-Required Safety Equipment



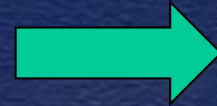
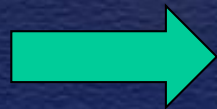
Safety Management System

- Safety Policy
- Safety Risk Management
- Safety Assurance
- Safety Promotion

Changes to Safety Culture

Reactive & forensic

- Whack-a-mole management
- Crisis safety management
- Silos of knowledge
- Data is collected



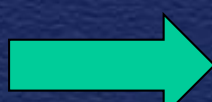
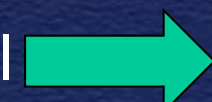
Risk-based & predictive

- Risk management
- Change management
- Data analysis and information sharing
- Data answers questions

Changes to Safety Culture

Reactive & forensic

- “Off with their heads”
- Safety organization responsible for safety
- Regulator is dictatorial and despised
- Safety expected by regulations



Risk-based & predictive

- Just culture
- Everyone responsible for safety
- Regulator is collaborative and respected
- Safety enhanced via voluntary initiatives

Douglas Adams

“Human beings, who are almost unique in having ability to learn from the experience of others, are also remarkable for their apparent disinclination to do so.”

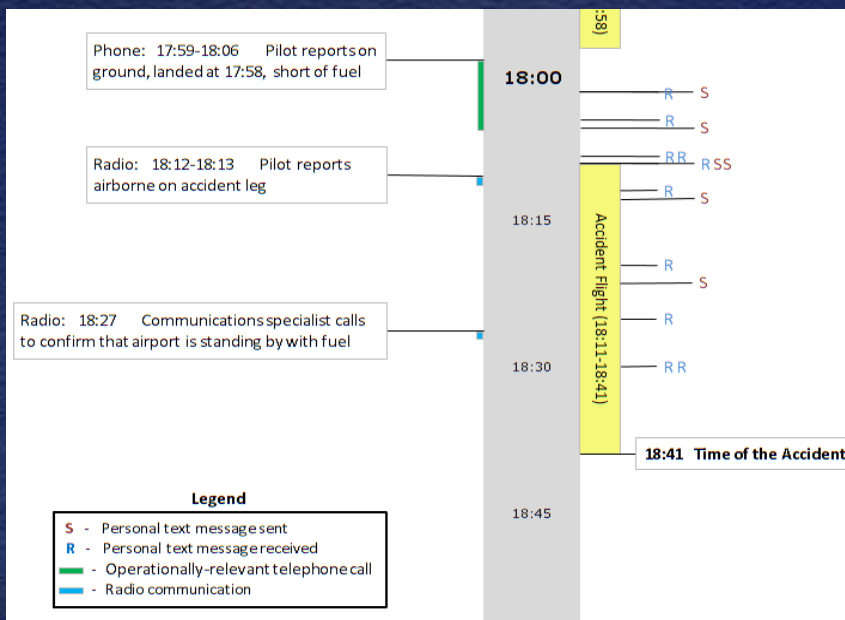


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Mosby, MO August 26, 2011



Photo 2: Main wreckage and initial impact point



Probable Cause:

“...the pilot’s failure to confirm that the helicopter had adequate fuel on board to complete the mission before making the first departure, his improper decision to continue the mission and make a second departure after he became aware of a critically low fuel level...”

Contributing to the accident... the pilot’s distracted attention due to personal texting during safety-critical ground and flight operations...”

Collision of Tugboat/Barge with Duck boat Philadelphia, PA July 7, 2010

